

Claims

1. Safety apparatus, comprising:
 - a needle hub having a proximal portion and a distal portion, a needle extending from a distal end of said needle hub;
 - a collar rotatably mounted about the distal portion of said needle hub;
 - a housing pivotally connected to said collar; and
 - a needle sheath attached to said collar for covering said needle extending from the distal end of said needle hub.
2. Safety apparatus of claim 1, wherein after said needle sheath is removed from said collar, said housing is pivotable to a position substantially in alignment along a longitudinal axis of said needle hub for covering said needle.
3. Safety apparatus of claim 1, wherein said needle sheath has a first engage mechanism proximate to its open end and wherein said collar has a second engage mechanism formed at its distal portion; and
 - wherein when said needle sheath is positioned over said needle and mates with said collar, said first engage mechanism engages with said second engage mechanism to attach said needle sheath to said collar.
4. Safety apparatus of claim 1, wherein said needle sheath has a groove formed circumferentially therearound proximate to its open end and wherein said collar has a rib circumferentially formed at the inner wall of its distal end; and
 - wherein said needle sheath is attached to said collar when said rib of said collar mates with said groove after said needle sheath is positioned over said needle and engages said collar.

5. Safety apparatus of claim 1, wherein said needle hub comprises a luer end at its proximal portion, a ring surrounding and spaced from said luer end, said ring being integral of said needle hub via a distal end wall extending transversely therefrom; and

wherein a user can readily grasp said ring to couple said safety device to a medical device by threadingly mating said luer end of said needle hub to a counterpart luer end at said medical device.

6. Safety apparatus of claim 5, wherein said ring comprises at least one window to enable the user to view said luer end of said needle hub and said needle hub.

7. Safety apparatus of claim 1, wherein said needle hub comprises at least one flange extending from its distal portion, said flange being located a predetermined distance from a wall projecting orthogonally from said needle hub, a space being formed between said flange and said wall circumferentially about said needle hub; and

wherein said collar comprises at least one protrusion at the inner wall of its proximal portion, said protrusion being dimensioned to fit to said space defined between said flange and said wall when said collar is mated to said needle hub, said collar rotatable about said needle hub after matingly fitted to said space.

8. Safety apparatus of claim 1, wherein said housing comprises a longitudinal opening formed by first and second lips each extending along substantially the length of said housing, said first lip overlapping a portion of said second lip with said opening being off centered from said longitudinal axis, each of said lips being angled toward the interior of said housing with the respective angles of said lips being varied along the length of said housing to effect a guide for said needle to smoothly enter into said housing at an angle through said opening when said housing is pivoted to

cover said needle, said needle not removable from said housing once said needle fully enters into said housing.

9. Safety apparatus of claim 1, wherein said collar has formed at its outer surface one lock mechanism and wherein said housing has formed at its proximal end an other lock mechanism, said one and other lock mechanisms coacting to fixedly retain said housing to said collar once said housing is pivoted to a position in substantial alignment with said needle hub to cover said needle.

10. Safety apparatus of claim 9, wherein said one lock mechanism comprises at least one one way catch member extending from the outer surface of said collar or said housing, and said other lock mechanism comprises at least one corresponding aperture at said housing or said collar, said one way catch member matingly coupled to said aperture for fixedly retaining said housing to said collar when said housing is pivoted to cover said needle.

11. In combination, a needle hub having a proximal portion and a distal portion, said proximal portion having a luer connector and a ring surrounding but in spaced relationship with said luer connector, said distal portion of said needle hub having a distal end from which a needle extends, a collar having a housing pivotally connected thereto fitted to and rotatable about said distal portion of said needle hub.

12. Combination of claim 11, further comprising a needle sheath connected to said collar, said needle sheath removable from said collar to expose said needle for use.

13. Combination of claim 12, wherein said needle sheath comprises a first engage mechanism proximate to its open end and wherein said collar comprises a second

engage mechanism at its distal portion, said first engage mechanism engages said second engage mechanism for attaching said needle sheath to said collar when said needle sheath is positioned over said needle and mates with said collar.

14. Combination of claim 12, wherein said needle sheath comprises a circumferential groove proximate to its open end and said collar comprises a circumferential rib at its distal portion, said rib mating to said groove when said needle sheath is positioned over said needle and fitted to said collar.

15. Combination of claim 11, wherein said ring comprises at least one window on its sidewall to enable viewing of said luer connector and said proximal portion of said needle hub.

16. Combination of claim 11, wherein said ring is adaptable to be used by a user to grasp said needle hub for connecting said luer connector to a corresponding luer connector of a medical device.

17. Combination of claim 11, wherein said needle hub comprises a plurality of flanges extending from its distal portion, said flanges being located a predetermined distance from a wall projecting orthogonally from said needle hub, a space being defined between said flanges and said wall circumferentially about said needle hub, and wherein said collar comprises a plurality of protrusions at the inner wall of its proximal portion, said protrusions being dimensioned to fit to said space when said collar is mated to said needle hub, said collar rotatable about said needle hub after matingly fitted to said space.

18. Combination of claim 11, wherein said housing comprises a longitudinal opening formed by first and second lips each extending along substantially the

length of said housing, said first lip overlapping a portion of said second lip with said opening being off centered from said longitudinal axis, each of said lips being angled toward the interior of said housing with the respective angles of said lips being varied along the length of said housing to effect a guide for said needle to smoothly enter into said housing at an angle through said opening when said housing is pivoted to cover said needle, said needle not removable from said housing once said needle fully enters into said housing.

19. Combination of claim 11, wherein said collar has formed at its outer surface a first lock mechanism and wherein said housing has formed at its proximal end a second lock mechanism, said first and second lock mechanisms coacting to fixedly retain said housing to said collar once said housing is pivoted to a position in substantial alignment with said needle hub to cover said needle.

20. A method of making a needle assembly, comprising the steps of:

- a) providing a needle hub having a proximal portion and a distal portion;
- b) fixedly attaching a needle to a distal end of said needle hub;
- c) pivotally connecting a housing to a collar;
- d) rotatably mounting said collar about the distal portion of said needle hub;

and

- e) attaching a needle sheath to said collar for covering said needle extending from the distal end of said needle hub.

21. Method of claim 20, further comprising the steps of:

- removing said needle sheath from said collar before using said needle; and
- pivoting said housing to a position substantially in alignment along a longitudinal axis of said needle hub for covering said needle.

22. Method of claim 20, further comprising the steps of:
 - forming a first engage mechanism on said needle sheath proximate to its open end;
 - forming a second engage mechanism on a distal portion of said collar; and
 - wherein said step e comprises the steps of:
 - positioning said needle sheath over said needle; and
 - mating said needle sheath with said collar until said first engage mechanism engages said second engage mechanism.
 23. Method of claim 20, further comprising the steps of:
 - forming a circumferential groove proximate to an open end of said needle sheath;
 - forming a rib circumferentially at the inner wall of a distal portion of said collar; and
 - wherein said step e comprises the steps of:
 - positioning said needle sheath over said needle; and
 - engaging said needle sheath to said collar until said rib of said collar mates with said groove of said needle sheath.
 24. Method of claim 20, wherein said step a comprises the steps of:
 - forming a luer end at the proximal portion of said needle hub; and
 - forming a ring in spaced relation to surround said luer end, said ring being integral of said needle hub via a distal end wall;
 - wherein a user can readily grasp said ring to couple said safety device to a medical device by ~~threadingly~~ mating said luer end of said needle hub to a counterpart luer end at said medical device.
- J.F.
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25. Method of claim 24, wherein said forming a ring step further comprises the step of:

forming at least one window on said ring to enable the user to view said luer end of said needle hub and said needle hub.

26. Method of claim 20, wherein said step a comprises the steps of:

providing at least one flange extending from said distal portion of said needle hub; and

locating said flange a predetermined distance from a wall projecting orthogonally from said needle hub to define a space between said flange and said wall circumferentially about said needle hub;

wherein the method further comprising the steps of:

forming at least one protrusion at the inner wall of said collar;

dimensioning said protrusion to fit to said space defined between said flange and said wall; and

mating said collar to said needle hub, said collar rotatable about said needle hub after being mated to said space.

27. Method of claim 20, further comprising the step of:

providing a longitudinal opening along said housing by forming first and second lips each extending along substantially the length of said housing, said first lip overlapping a portion of said second lip with said opening being off centered from said longitudinal axis, each of said lips being angled toward the interior of said housing with the respective angles of said lips being varied along the length of said housing to effect a guide for said needle to smoothly enter into said housing at an angle through said opening when said housing is pivoted to cover said needle, said needle not removable from said housing once said needle fully enters into said housing.

28. Method of claim 20, further comprising the steps of:
 - forming a first lock mechanism at the outer surface of said collar; and
 - forming a second lock mechanism at a proximal end of said housing;

wherein said first and second lock mechanisms coact to fixedly retain said housing to said collar once said housing is pivoted to a position in substantial alignment with said needle hub to cover said needle.